REVIEW ARTICLE

Should we have any doubts about hypertension therapy in elderly patients?

ACCF/AHA 2011 expert consensus document on hypertension in the elderly

Maciej Banach[1], Wilbert S. Aronow[2]

1 Department of Hypertension, Chair of Nephrology and Hypertension, Medical University of Lodz, Poland
2 Department of Medicine, Cardiology Division, Westchester Medical Center/New York Medical College, Valhalla, New York, United States

KEY WORDS

blood pressure, elderly, hypertension, management, therapy

ABSTRACT

Hypertension therapy in elderly patients still constitutes a considerable challenge. Its importance is also emphasized by the fact that, nowadays, many international organizations focus on the problem of an aging society (in 2030, life expectancy at birth in the European Union 27 is expected to rise to 85.3 years for women and 80.0 years for men). They discuss not only the optimal therapy in elderly patients, the problem of compliance and polypragmasy, but also the quality of life as well as the social, economic, and psychological challenges associated with this patient group. However, neither the available trials nor the European Society of Hypertension guidelines (2009) finally answered all important questions on hypertension management in elderly people. Thus, the first official recommendations on hypertension therapy in this patient group were much expected. The American College of Cardiology Foundation/American Heart Association 2011 Expert Consensus Document on Hypertension in the Elderly was published on April 25, 2011. The present article summarizes the most important issues discussed in this document.

Correspondence to:
Maciej Banach, MD, PhD, FAHA, FESC, FASA, Katedra Nefrologii i Nadciśnienia Tętniczego, Uniwersytet Medyczny w Łodzi, ul. Żeromskiego 113, 90-549 Łódź, Poland, phone: +48-42-639-37-71, fax: +48-42-639-37-82, e-mail: maciejbanach@aol.co.uk
Received: July 28, 2011.
Accepted: July 29, 2011.
Conflict of interest: none declared.
Pol Arch Med Wewn. 2011; 121 (7-8): 253-258

Introduction **Current controversies in hypertension therapy** In October 2009, the European Society of Hypertension (ESH) presented its updated recommendations, which were important in many respects.[1] However, after almost 2 years since the publication, there are still many issues to be solved. Despite continuously accumulating data, many decisions on hypertension management are still made without the support of evidence from the available clinical trials. For example, we still do not know the optimal strategy for dealing with patients with stage 1 hypertension, and there is uncertainty about whether subjects with blood pressure (BP) in the range 140–149/90–99 mmHg would benefit from antihypertensive treatment.[2,3] Moreover, data from the available clinical trials do not support the view that lowering BP below 130 mmHg in high-risk patients provides an additional benefit, which might be connected with the J-curve phenomenon, observed particularly in patients with hypertension and diabetes and coronary artery disease (CAD) (and probably also with ventricular dysfunction).[4-6] Another problem is associated with the effectiveness of hypertension therapy (in many European countries BP is controlled effectively only in 25%–30% of the patients), which is influenced by compliance, therapy adherence, and therapeutic inertia.[2,3,7] It seems that combined therapy, and especially polypills, might be an efficient solution to these problems.[8] Since the publication of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure guidelines (2003),[9] there has also been much discussion whether we should treat high-risk patients with high normal BP (with prehypertension), although the current ESH guidelines do not recommend such therapy.[1,10,11]

Hypertension therapy in elderly patients Hypertension therapy in elderly patients is another

important issue,[12] which had been controversial until the results of HYVET (Hypertension in the Very Elderly Trial) were published.[13] It is also important because nowadays many, not only medical, international organizations (including the European Union [EU]), focus on the challenges of an aging society. They discuss not only the optimal therapy in elderly patients, the problem of compliance and polypragmasy, but also the quality of life as well as the social, economic, and psychological problems of elderly people. And the current situation is quite alarming. In Europe, the average life expectancy at birth has risen from around 45 years in the 1900s to 65.6 years in 1950–1955 to 75.1 years in 2005–2010.[14] In 2030, life expectancy at birth in the EU27 is expected to rise to 85.3 years for women and 80.0 years for men.[14,15] What is more, the number of Europeans aged 65 years and older is expected to increase by 45% between 2008 and 2030, and they may even constitute over 30% of the population by 2060.[14,15] Approximately 34 million Americans are currently 65 years of age and older. This number is expected to reach 75 million by 2040, representing more than 20% of the US population.[16,17] Individuals 85 years of age and older are the largest growing subset of the US population, and there have been dramatic improvements in life expectancy in older adults.[16,17]

A demographic collapse observed in many developed countries may result in a situation where only 40%–50% of the adult population will earn for the elderly. It is also a reason why the population of many countries essentially decreases each year. Therefore, we currently face the challenge not only to increase the length of life, but especially to improve the quality of life of elderly persons and to make them more active (the main aim of the EU initiative: *Active and Healthy Aging*).[14,15] The activities should be focused on several areas, including hypertension, which is connected with the fact that hypertension is the most common preventable cause of death worldwide.[18] Almost one billion persons worldwide have hypertension (with the prevalence projected to 1.5 billion by 2025), and about 7 million persons die of hypertension per year.[18,19] Hypertension is also the leading cause of mortality and the third cause of disability.[18,19]

Hypertension in elderly people is a major risk factor for coronary events, stroke, heart failure, and peripheral arterial disease.[19,20] Hypertension is present in approximately 69% of patients with first myocardial infarction,[19] in approximately 77% of patients with first stroke,[19] in approximately 74% of patients with chronic heart failure,[19] and in 60% of patients with peripheral arterial disease.[20] Compared with younger patients with hypertension, the prevalence of target organ damage and clinical cardiovascular (CV) disease is significantly higher in the elderly, as is the incidence of new CV events.[21] However, despite this increased risk, elderly patients have the lowest rate of BP control.[16,18] Barriers to treatment of hypertension include physicians not recognizing that most elderly persons should be treated strictly according to the recommended guidelines to decrease CV morbidity and mortality. Prevalent comorbidities, polypharmacy, and the high cost of medications also contribute to lower BP control rates in this group of patients.[16,18,22,23]

In the early 1980s and then in the 1990s, a number of trials for the first time proved that active treatment of hypertension with most available antihypertensive drugs in individuals 60–65 years of age, as compared with placebo or no treatment, significantly reduced the risk of complications.[12,17,24] In the HYVET trial, 3845 individuals aged 80 years and older, mean age 83.6 years, with a sustained systolic BP (SBP) of 160 mmHg or higher were randomized to indapamide at a dose of 1.5 mg daily or matching placebo.[13] Perindopril (at a dose of 2 mg or 4 mg daily) or placebo was added if there was a need to achieve the target BP of 150/80 mmHg.[13] The authors showed that antihypertensive therapy significantly decreased the incidence of fatal stroke by 39% ($P = 0.05$), all-cause mortality by 21% ($P = 0.02$), and heart failure by 64% ($P < 0.001$).[13] One should note that the prevalence of CV disease (CVD) was only 12% at baseline, i.e., much lower than generally reported in community-based samples of octogenarians. Therefore, the absolute reduction in CV events could be potentially much greater than that observed in HYVET.[13,25]

ACCF/AHA guidelines 2011 **Epidemiological data**

However, neither the HYVET trial[13] nor the ESH guidelines (2009)[1] finally answered all important questions on hypertension management in elderly people. Thus, the first official recommendations on hypertension therapy in elderly patients were much expected. The American College of Cardiology Foundation (ACCF)/American Heart Association (AHA) 2011 Expert Consensus Document on Hypertension in the Elderly was published online on April 25, 2011.[16] The authors emphasized that in older Americans, hypertension is the most important risk factor for CVD, with estimates that 69% of patients with incident myocardial infarction, 77% with incident stroke, and 74% with incident heart failure have antecedent hypertension.[16] Hypertension is also a major risk factor for incident diabetes mellitus, atrial fibrillation, chronic kidney disease, dissecting aortic aneurysm, sudden cardiac death, angina pectoris, the metabolic syndrome, thoracic and abdominal aortic aneurysms, left ventricular hypertrophy, vascular dementia, Alzheimer's disease, and ophthalmologic disorders.[16] In 2005, hypertension was the primary cause of death for almost 60,000 Americans, and a primary or contributory cause for over 300,000 of the 2.4 million total deaths that year.[16] BP control rates are lower in the elderly, especially after 80 years of age. BP is adequately controlled in only 36% of men and 28% of women aged 60–79 years and in 38% of men and 23% of women aged 80 years

and older.[9,16] The prevalent comorbidities, polypharmacy (the average elderly patient takes over 6 drugs), the lack of compliance, nonadherence, drug interactions, therapeutic inertia, and high cost of medications were the most important factors influencing therapy effectiveness.[16,17,23]

Diagnosis of hypertension in elderly patients The diagnosis of hypertension in the elderly should be based on at least 3 different BP measurements taken on 2 separate ambulatory visits to account for the natural variability of BP and other factors that can affect BP.[16] At least 2 measurements should be obtained once the patient is comfortable and settled for at least 5 minutes. BP should also be measured with the patient standing for 1 to 3 minutes to evaluate for postural hypotension or hypertension, which is particularly important in the elderly because of stiff large arteries, age-related decreases in baroreflex buffering, and autonomic dysregulation.[8,9,16] Pseudohypertension in the elderly, which occurs in 1.7% to as many as 70% of the patients, is also closely connected with the above conditions. It refers to a falsely increased SBP that results from markedly sclerotic arteries that do not collapse during inflation of the BP cuff. Correct identification of pseudohypertension is crucial to avoid overtreating high BP and should be suspected in elderly subjects with refractory hypertension, no organ damage, and/or symptoms of overmedication, and confirmation requires direct intraarterial BP measurement.[16]

Blood pressure goal of therapy and non-pharmacological management The current ACCF/AHA recommendations have not determined the optimal BP treatment goal in the elderly.[16] However, it is suggested that a therapeutic target in patients with hypertension should be a BP of <140/90 mmHg in adults 65–79 years of age and an SBP of 140–145 mmHg if tolerated in patients aged 80 years and older.[16,17] However, this is mainly based on expert opinion rather than on data from randomized controlled trials (RCTs), and it is unclear whether the target SBP should be the same in 65- to 79-year olds vs. older patients.[16,24] According to the available data, it is reasonable to recommend the SBP level of 140–145 mmHg if tolerated in persons aged 80 years and older.[16,17]

The ACCF/AHA guidelines recommend that non-pharmacological lifestyle measures should always be encouraged in elderly patients both to prevent development of hypertension and as adjunctive therapy in those with hypertension.[16] These include strict sodium restriction (a meta-analysis of 56 clinical trials found mean BP reduction of 3.7/0.9 mmHg for a 100 mmol/day decrease in sodium excretion), regular physical activity (a meta-analysis of 54 RCTs found aerobic exercise programs reduced BP about 3.8/2.6 mmHg), reduction of excess body weight (a meta-analysis of 18 trials concluded that loss of 3%–9% of body weight reduces SBP and DBP by about 3 mmHg each) and mental stress, smoking cessation, and avoidance of excessive alcohol intake. It is especially important because according to the available data from the national surveys, nutrition and exercise counseling is provided at only 35% and 26% of visits, respectively, in patients with hypertension, and patients aged 75 years and older rarely receive such counseling.[16]

Drug therapy in elderly patients The initial antihypertensive drug therapy should be started at the lowest dose and gradually increased depending on the BP response to the maximum tolerated dose. If the antihypertensive response to the initial drug is inadequate after reaching the full dose (not necessarily the maximum recommended dose), a second drug from another class should be added, provided the initial drug is tolerated.[16] ACCF/AHA guidelines confirm the previous (2009) ESH recommendations[1] that all main antihypertensive drug classes – diuretic,[25] angiotensin-converting enzyme inhibitors (ACEIs),[26] angiotensin-receptor blockers (ARBs), calcium channel blockers (CCBs), and β-blockers[27] – have shown significant benefits in reducing CV outcomes in randomized trials among elderly persons.[16,17,24] The choice of specific drugs is dictated by efficacy, tolerability, presence of specific comorbidities, and cost, which especially influence compliance in elderly patients.[16] However, if a diuretic is not the initial drug, it should be indicated as a second drug.[16] If the hypertension control is inadequate after reaching the full dose of 2 classes of drugs, a third drug from another class should be added.[16] When BP is >20/10 mmHg above the goal, drug therapy should generally be initiated with 2 antihypertensive drugs, one of which should be a thiazide diuretic. However, it is crucial that treatment of hypertension must be individualized, particularly in the elderly (FIGURE).[16,17,24] Before adding new antihypertensive drugs, possible reasons for inadequate BP response should be carefully examined. These mainly include noncompliance, volume overload, drug interactions, obesity, smoking, excessive intake of alcohol, insulin resistance, and pseudoresistance (an inadequate response to hypertension therapy because the BPs measured in the physician's office are falsely high compared with those measured at home or by 24-hour ambulatory BP monitoring).[8,9,16]

Where possible, a combination therapy should be the method of choice. The most obvious benefit of drug combinations is enhanced efficacy. The second one concerns avoidance of adverse effects because each drug can be administered at a lower dose. A third issue concerns convenience, although a combination regimen could be confusing and distracting to elderly patients, and could lead to poor treatment compliance. Conversely, a well-designed combination pill that incorporates doses of 2 agents significantly enhances convenience and compliance. Further potential value may result from the reciprocal pharmacokinetic

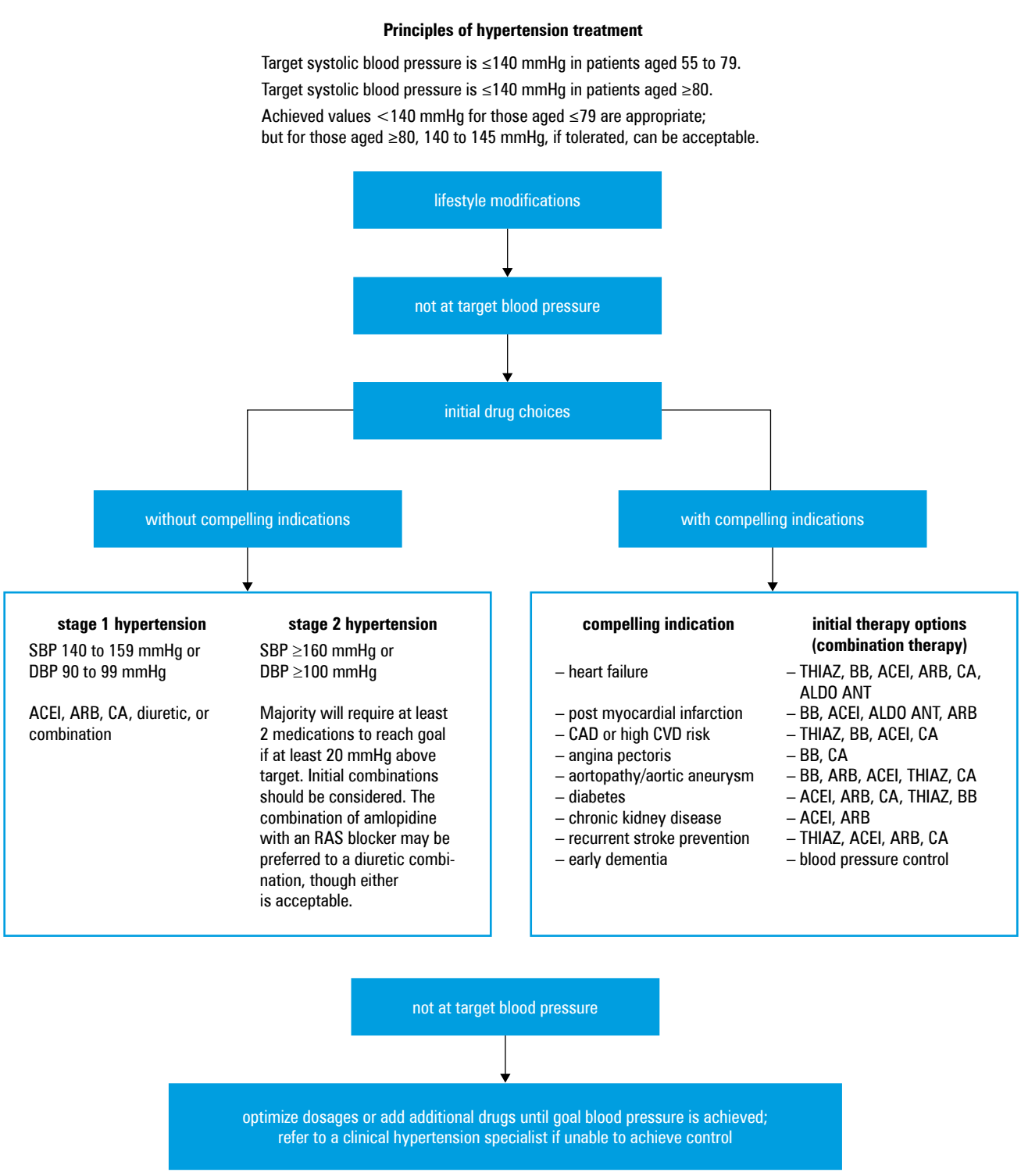

FIGURE Algorithm for treatment of hypertension in the elderly. Adopted and modified from Chobanian et al.[9,16]
Abbreviations: ACEI – angiotensin-converting enzyme inhibitor, ALDO ANT – aldosterone antagonist, ARB – aldosterone receptor blocker, BB – β-blocker, CA – calcium antagonist, CAD – coronary artery disease, CVD – cardiovascular disease, DBP – diastolic blood pressure, RAS – renin-angiotensin system, SBP – systolic blood pressure, THIAZ – thiazide diuretic

effects that the 2 drugs might have on each other. Finally, it is interesting to consider the attributes of ACEIs, ARBs, and calcium antagonists, which exhibit antimitotic, antiatherosclerotic, and/or pleiotropic actions in addition to BP lowering. Some combinations of these newer agents may provide even more protective effects on the CV system (additive target organ protection).[16,17,28]

Unresolved issues The current ACCF/AHA recommendations still raise some important questions regarding hypertension treatment in the elderly. One is to agree on a working definition of the term "elderly", which is associated with great heterogeneity among aging individuals, making it impossible to readily assign the overall chronological value that establishes the state of being elderly. It is also crucial to finally establish BP

values for making the diagnosis of hypertension as well as setting targets for treatment. The most practical definition of hypertension in the elderly should describe a BP level above which medical intervention – lifestyle changes or drugs – might be expected to provide significant clinical benefits. A third issue is to identify, for those hypertensive elderly patients in whom pharmacological therapy is indicated, which drugs will be most effective for reducing CV events.[16] However, especially in these patients, we should also be very careful to avoid intensive lowering of BP, as this might be poorly tolerated and might increase CV events (the J-curve phenomenon – mainly with concomitant diabetes and CAD).[4] Probably only the forthcoming studies, including SPRINT (Systolic Blood Pressure Intervention Trial)[29] and ESH-SHOT (Stroke in Hypertension Optimal Treatment trial of the European Society of Hypertension),[4] will provide the data to establish clear guidelines on the optimal target BP level for these patients.[30] A final question is whether there is a subgroup of elderly patients with hypertension in whom treatment is not beneficial.[16,17]

REFERENCES

1 Mancia G, Laurent S, Agabiti-Rosei E, et al.; European Society of Hypertension. Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document. J Hypertens. 2009; 27: 2121-2158.

2 Banach M, Rysz J. Current problems in hypertension and nephrology. Expert Opin Pharmacother. 2010; 11: 2575-2578.

3 Banach M, Kjeldsen SE, Narkiewicz K. Controversies in hypertension treatment. Curr Vasc Pharmacol. 2010; 8: 731-732.

4 Banach M, Michalska M, Kjeldsen SE, et al. What should be the optimal levels of blood pressure: does the J-curve phenomenon really exist? Expert Opin Pharmacother. 2011; 12: 1835-1844.

5 Banach M, Bhatia V, Feller MA, et al. Relation of baseline systolic blood pressure and long-term outcomes in ambulatory patients with chronic mild to moderate heart failure. Am J Cardiol. 2011; 107: 1208-1214.

6 Aronow WS. Commentary on implications of new hypertension guidelines in the United States. Hypertension. 2011. In press.

7 Bielecka-Dabrowa A, Aronow WS, Rysz J, Banach M. The rise and fall of hypertension: lessons learned from Eastern Europe. Curr Cardiovasc Risk Rep. 2011; 5: 174-179.

8 Aronow WS. Office management of hypertension in older persons. Am J Med. 2011; 124: 498-500.

9 Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. The JNC 7 Report. JAMA. 2003; 289: 2560-2572.

10 Sethi A, Arora RR. Ambulatory blood pressure as a predictor of cardiovascular risk. Arch Med Sci. 2009; 5: 3-9.

11 Shah T, Aronow WS, Peterson SJ, Goldwag D. Diagnosis, treatment, and referral of hypertension or prehypertension in an emergency department after an educational program: preliminary results. J Clin Hypertens (Greenwich). 2011; 13: 413-415.

12 Aronow WS. Why and how we should treat elderly patients with hypertension? Curr Vasc Pharmacol. 2010; 8: 780-787.

13 Beckett NS, Peters R, Fletcher AE, et al. Treatment of hypertension in patients 80 years of age or older. N Eng J Med. 2008; 358: 1887-1898.

14 Eurostat 2010. A statistical perspective on women and men in the EU27. http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/1-05 032 010-AP/EN/1-05 032 010-AP-EN.PDF. Accessed May 19, 2011.

15 Leis M, Gijsbers G. Report on Active and Healthy Ageing – A Long-term View up to 2050. Updated with results from the expert workshop on "Active and Healthy Ageing". 31.01.2011. Brussels. European Foresight Platform, 2011.

16 Aronow WS, Fleg JL, Pepine CJ, et al.; ACCF Task Force. ACCF/AHA 2011 expert consensus document on hypertension in the elderly: a report of the American College of Cardiology Foundation Task Force on Clinical Expert Consensus Documents. Circulation. 2011; 123: 2434-2506.

17 Fleg JL, Aronow WS, Frishman WH. Cardiovascular drug therapy in the elderly: benefits and challenges. Nat Rev Cardiol. 2011; 8: 13-28.

18 Lopez AD, Mathers CD, Ezzati M, et al. Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. Lancet. 2006; 367: 1747-1757.

19 Lloyd-Jones D, Adams R, Carnethon M, et al. Heart disease and stroke statistics – 2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation. 2009; 119: e21-181.

20 Aronow WS, Ahmed MI, Ekundayo OJ, et al. A propensity-matched study of the association of peripheral arterial disease with cardiovascular outcomesin community-dwelling older adults. Am J Cardiol. 2009; 103: 130-135.

21 Banach M, Aronow WS. Hypertension therapy in the elderly – do we know the answers to all the questions? The status after publication of the ACCF/AHA 2011 Expert Consensus Document on Hypertension in the Elderly. J Hum Hypertens. 2011. In press.

22 Vulic D, Loncar S, Krneta M, et al. Risk factor control and adherence to treatment in patients with coronary heart disease in the Republic of Srpska, Bosnia and Herzegovina in 2005–2006. Arch Med Sci. 2010; 6: 270-275.

23 Gandelman G, Aronow WS, Varma R. Prevalence of adequate blood pressure control in self-pay or Medicare patients versus Medicaid or private insurance patients with systemic hypertension followed in a university or general medicine clinic. Am J Cardiol. 2004; 94: 815-816.

24 Gąsowski J, Tikhonoff V, Stolarz-Skrzypek K, et al. Treatment of hypertension in the elderly in 2010 – a brief review. Expert Opin Pharmacother. 2010; 11: 2609-2617.

25 Szucs TD, Waeber B, Tomonaga Y. Cost-effectiveness of antihypertensive treatment in patients 80 years of age or older in Switzerland: an analysis of the HYVET study from a Swiss perspective. J Hum Hypertens. 2010; 24: 117-123.

26 Lubas A, Zelichowski G, Prochnicka A, et al. Renal vascular response to angiotensin II inhibition in intensive antihypertensive treatment of essential hypertension. Arch Med Sci. 2010; 6: 533-538.

27 Bielecka-Dabrowa A, Aronow WS, Rysz J, Banach M. Current place of beta-blockers in the treatment of hypertension. Curr Vasc Pharmacol. 2010; 8: 733-741.

28 Matsuzaki M, Ogihara T, Umemoto S, et al.; Combination Therapy of Hypertension to Prevent Cardiovascular Events Trial Group. Prevention of cardiovascular events with calcium channel blocker-based combination therapies in patients with hypertension: a randomized controlled trial. J Hypertens. 2011; 29: 1649-1659.

29 SPRINT trial. Clinicaltrials.gov: http://www.clinicaltrials.gov/ct2/show/NCT01 206 062. Accessed June 17, 2011.

30 Ogihara T, Saruta T, Rakugi H, et al.; Valsartan in Elderly Isolated Systolic Hypertension Study Group. Target blood pressure for treatment of isolated systolic hypertension in the elderly: valsartan in elderly isolated systolic hypertension study. Hypertension. 2010; 56: 196-202.

ARTYKUŁ POGLĄDOWY

Czy powinniśmy mieć wątpliwości związane z leczeniem nadciśnienia tętniczego u osób w podeszłym wieku?

Wytyczne American College of Cardiology Foundation i American Heart Association 2011

Maciej Banach[1], Wilbert S. Aronow[2]

1 Zakład Nadciśnienia Tętniczego, Katedra Nefrologii i Nadciśnienia Tętniczego, Uniwersytet Medyczny w Łodzi, Łódź
2 Department of Medicine, Cardiology Division, Westchester Medical Center/New York Medical College, Valhalla, Nowy Jork, Stany Zjednoczone

SŁOWA KLUCZOWE

ciśnienie tętnicze krwi, leczenie, nadciśnienie tętnicze, podeszły wiek, postępowanie

STRESZCZENIE

Leczenie nadciśnienia tętniczego u chorych w podeszłym wieku wciąż stanowi poważne wyzwanie. Jego znaczenie podkreśla fakt, że wiele organizacji międzynarodowych zajmuje się obecnie problemem starzejącego się społeczeństwa (szacuje się, że w 2030 roku przewidywana długość życia dla urodzonych w krajach Unii Europejskiej wzrośnie do 85,3 roku dla kobiet i 80 lat dla mężczyzn). Organizacje te skupiają się nie tylko na optymalnej terapii, przestrzeganiu zaleceń i zjawisku polipragmazji u osób starszych, ale omawiają także jakość życia oraz wyzwania społeczne, ekonomiczne i psychologiczne związane z tą grupą pacjentów. Jednak ani dostępne badania, ani wytyczne Europejskiego Towarzystwa Nadciśnienia Tętniczego z 2009 roku nie udzielają wyczerpujących odpowiedzi na wszystkie ważne pytania dotyczące postępowania przeciwnadciśnieniowego u osób w podeszłym wieku. Dlatego też z niecierpliwością oczekiwano pierwszych oficjalnych zaleceń dotyczących leczenia przeciwnadciśnieniowego w tej grupie chorych. Stanowisko ekspertów American College of Cardiology Foundation i American Heart Association dotyczące nadciśnienia tętniczego osób w podeszłym wieku opublikowano 25 kwietnia 2011 roku. Niniejsza praca stanowi podsumowanie najważniejszych zagadnień omówionych w tym dokumencie.

Adres do korespondencji:
Maciej Banach, MD, PhD, FAHA, FESC, FASA, Katedra Nefrologii i Nadciśnienia Tętniczego, Uniwersytet Medyczny w Łodzi, ul. Żeromskiego 113, 90-549 Łódź, tel.: 42-639-37-71, fax: 42-639-37-82, e-mail: maciejbanach@aol.co.uk
Praca wpłynęła: 28.07.2011.
Przyjęta do druku: 29.07.2011.
Nie zgłoszono sprzeczności interesów.
Pol Arch Med Wewn. 2011; 121 (7-8): 253-258
Tłumaczyła dr med. Małgorzata Kołcz